This is Exhibit "A" referred to in
the affidavit of ALAN F. GRAVES
dated at Ottawa, Ontario, this
24th day of November, 2004.

A Commissioner, etc.

Petardina Claire Gordon, a Commissioner, etc.,
City of Ottawa, for Smart & Biggar, Barristers
and Solicitors and Fetherstonhaugh & Co.,
Patent and Trade Mark Agents.
Expires July 21, 2007.

11965RO

Invention Disclosure Submission Reply

			09 jan 2000
	Photonic Switch with power equalization across each WDM output port		

ORIGINAL
DO NOT MARK

Inventors

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Attachments

<End of Attachments>

	no		no
DAVID MANN		DAVID MANN	
	Advanced Technology		
	BILL JUNKIN, GREG BENOIT		
	20 nov 1999		
	no		
No			

	Photonic Switch, Photonic Cross-connect. Product designations not yet in place (will be a major technology program in 2000)
	no
no	24340

In an all-optical network with Photonic Switching, the act of switching a new path changes the concatenation of optical paths making up the end-to-end link from transmitter to receiver, resulting in variations in optical levels for each of the optical carriers in each WDM exit port/ongoing fiber from the switch node. This can lead to either some low power optical carriers within a WDM group, which cannot maintain an adequate signal to impairment to allow error-free reception,or may lead to individual carriers having too high a power, resulting in impairments in other carriers, by one of several mechanisms. This disclosure shows a method of overcoming this by adding a central control system with active power level control at a switch node, permitting a per-wavelength power level adjustment to be integrated into the photonic switch, thereby allowing the optical signals to all be set at the same level.This disclosure results from recommendations from Bill Junkin in his e-mail of Nov 30/99.NOTE. OTHER INVENTORS MAY BE ADDED LATER.

This was largely covered in the section above. The problem to be solved is the impairment in the performance of an all-optical switched network, due to the build up of uncontrolled or partially controlled tolerances through the concatenated spans between switches that comprise the overall optical path from transmitter to receiver, given that the concatenation of spans into an end-to-end link cannot be predicted ahead of the decision to esteblish the switched path. These impairments come in several forms, such as dispersion, non-linear effects, and power level control. This disclosure deals explicitly with power level control, but some of the techniques may be extensible to at least some of the other impairments.

This is the first attempt at solving this problem in a wavelength sliced switch

This will be (and has already been partially) provided in-depth separately. The solution is based upon adding two more parallel switch planes to a (typically) 40-160 lambda wavelength plane switch, combined with two more WDD subsystems, a power measuring receiver, a control system with latching memory and a means for modulating the optical loss (or gain) across the individual wavelength plane switches. As a result, whenever a new path is being set up the output of the new signal can be monitored and adjusted until it matches the level of other optical carriers in the same WDM bundleSubstantial information has already been passed to Bill Junkin/Greg Benoit prior to Nov 30/1999, and more will be provided before the end of jannary.

This is a step towards a practical implementation of an all-optical switched network

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